REMARKS

The Office Action mailed January 24, 2005 has been fully and carefully considered. Applicants acknowledge with appreciation Examiner Kim's detailed Office Action and his substantive development of the prior art in connection with the original claims. Examiner Kim's thoroughness in this regard has greatly assisted Applicants in the preparation of this response. Applicants now offer the remarks to follow in support of the patentability of the claims presently in the application.

Drawing Objection

Paragraph 2 of the Office Action raises an objection to the drawing for failure to illustrate the subject matter of claim 16. Since claim 16 is not currently pending, the objection is moot. There is no need to amend the drawing.

The Rejections

The Office Action presents no less than seven rejections under 35 U.S.C. 102(b), each based on a different reference and each embracing a number of the original claims. In addition, the Office Action contains three separate rejections under 35 U.S.C. 103(a) addressing certain ones of the original dependent claims. Because claims 1-23 are no longer pending, Applicants decline to comment specifically on these rejection since the rejections *per se* are moot. Instead, Applicants will formulate the following arguments based on newly presented claims 24-30. The prior art references applied in the several rejections contained in the Office Action will be discussed in connection with what they were originally relied on to show, and for what they fail to show or suggest.

Waeselynck (U.S. Patent No. 3,733,462) discloses a heat exchanger and a way to cool it. The helical vanes 8 are actually within the combustion chamber itself, not between the closure wall 1 and the jacket 10. See, for example, col. 1, lines 21-24 and col. 2, lines 3-6. In addition, all the intake air ultimately passes through the combustion chamber after first having been introduced in the space between the combustion chamber and the jacket 10. Thus, Waeselynck discloses one particular arrangement designed to cool a combustion chamber, but not one upon which any of claims 24-30 will read. Applicants fail to find each and every limitation of any of the claims in the disclosure of Waeselynck. Accordingly, Applicants conclude that Waeselynck cannot serve as an anticipation of any of claims 24-30.

Schirmer (U.S. Patent No. 3,939,653) illustrates a cooling arrangement for a combustion chamber. The fins or tabs 40, 42 in annular chamber 18' do not result in spiral flow through a plurality of passages. Rather, the result in Schirmer is that the air will merely progress past the fins or tabs in somewhat less than a straight path. Schirmer discloses one particular gas turbine combustor, but Schirmer fails to disclose each and every limitation of any of claims 24-30. Accordingly, Schirmer cannot serve as an anticipation of any of claims 24-30.

Shekleton (U.S. Patent No. 5,187,932) illustrates a system which is designed to cool the combustion chamber by conveying all the air intended for the combustion chamber around the exterior of the chamber before it enters the combustion zone. Shekleton provides trip strips 48 on the outer surface of the combustor and mentions that the flow of fluid is "generally helically" in direction. What Shekleton does not

disclose is spiral flow through a plurality of passages. Trip strips are simply strips, not structure serving in any way to define passages, or even a single passage. In addition, all the intake oxidant in flow path 28 first passes by the outer surface of the combustor, and then all the intake oxidant passes through the combustion chamber in a single portion. None of claims 24-30 will read on Shekleton. Because Shekleton fails to disclose each and every element of any of claims 24-30, Shekleton cannot anticipate any of these claims.

Liebe (U.S. Patent No. 6,341,485) discloses a combustor wherein cooling fluid between inner and outer walls 6, 7 enters the space between 6, 7, at 9 and exits at 22. During the time and over the area of flow, while between the inner and outer walls 6, 7, the cooling fluid is subjected to elements to control fluid movement, but there is no flow in a spiral path through a plurality of passages. In addition, nothing in Liebe indicates any connection between the cooling fluid and combustion fluid which is to enter combustor intake 4. Liebe does not disclose that air from a compressed air source provides a portion of that air as the cooling fluid, and another portion for combustion. None of claims 24-30 will read on Liebe. Liebe cannot serve to anticipate because Liebe fails to disclose each and every element of any of claims 24-30.

Farlow (U.S. Patent No. 2,221,185) discloses a power generating unit with a combustion chamber 12. The space 13 between inner and outer shells contains a helically arranged fin or baffle 76. Air and fuel enter combustion chamber 12 at 34, while the fin or baffle 76 directs the flow of combustion gases and water vapor. See, for example, Fig. 1 and page 2, right hand column, lines 16-42 of Farlow. A single helically

arranged fin or baffle results in but a single passage, not plural passages. Further, Farlow uses a separate fluid, water, along with combustion gases in the space between the inner and outer shells, and feeds all the compressed air 14 directly into the combustion chamber (except for that used to compress fuel and water). Farlow fails to disclose each and every element of any of claims 24-30 and thus fails as an anticipation.

Ross (U.S. Patent No. 2,728,192) discloses a combustion chamber made up of a firing chamber F and a cooling chamber C. There is a single spiral channel 12 around the firing chamber F through which the combustion fuel (for example aniline) flows both to preheat the fuel and to cool the chamber. There is another single channel 18 around the cooling chamber C through which water is directed as a coolant. Oxidant (liquid) for combustion enters the combustion chamber at 37-42. Ross does not disclose a source of compressed air where one portion serves to cool the combustor and another portion enters the combustion chamber. Ross does not disclose spiral flow of air through a plurality of passages between sleeves 11, 17 and the combustion chamber. None of claims 24-30 finds counterparts for each and every one of its limitations in Ross. Thus Ross cannot serve to anticipate any of these claims.

The Japanese document (JP 10-082527) discloses a combustor wherein all the combustion air first enters annular space 22 to cool liner 17 before ultimately passing through the combustion chamber. The Japanese document does not disclose that a portion of the compressed air from a source enters the annular space for cooling, and a

second portion enters the combustion chamber. As a result, the Japanese document will not serve to anticipate any of claims 24-30.

Glezer, et al. (U.S. Patent No. 6,098,397) (hereafter, Glezer) discloses a combustor with a plurality of concavities 84 in a space around the combustor, the concavities 84 intended to decrease pressure reduction when combustion air is first used to cool the liner of the combustor. Glezer does not disclose spiral flow of cooling air through a plurality of passages for directing air within the space surrounding the combustor. Since each and every element of none of claims 24-30 can be found in Glezer, the patent cannot serve as an anticipation of any of these claims.

None of the references suggest a combustor wherein compressed air from a source is portioned between the combustion chamber and a plurality of spiral passages between the combustion chamber liner and a convector liner. See new claims 24 and 27. None of the references suggest a combustor wherein compressed air from a source is portioned between the combustion chamber and a spiral path through a plurality of passages between the combustion chamber liner and a convector liner. See new claim 30. Even more so, none of the references suggests a combustion chamber having both first and second liners and first and second convectors, a pluralities of spiral passages between the first liner and convector, and a second plurality of passages between the second liner and convector. See new claims 25 and 29. There is nothing present other than the disclosure provided in this application to suggest such combinations.

Rejected claims 1-23 have been canceled. New claims 24-30 have been presented. The foregoing remarks demonstrate that none of the references in this

crowded technology will serve to support a proper rejection for anticipation, and that any combination of these references to support an obviousness rejection would necessarily, and improperly, draw upon hindsight reconstruction based on Applicants' disclosure. In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of pending claims 24-30.

If upon further examination and review of this response, Examiner Kim is of the view that a telephone call to Applicants' undersigned representative may be helpful in advancing the prosecution of this application, then Examiner Kim is invited to telephone Applicants' undersigned representative at 571.203.2757. In this way, prosecution may be brought to a successful and mutually beneficial conclusion.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: 
Clifford D. Crowder
Reg. No. 56,639